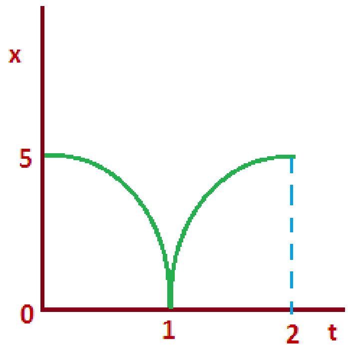
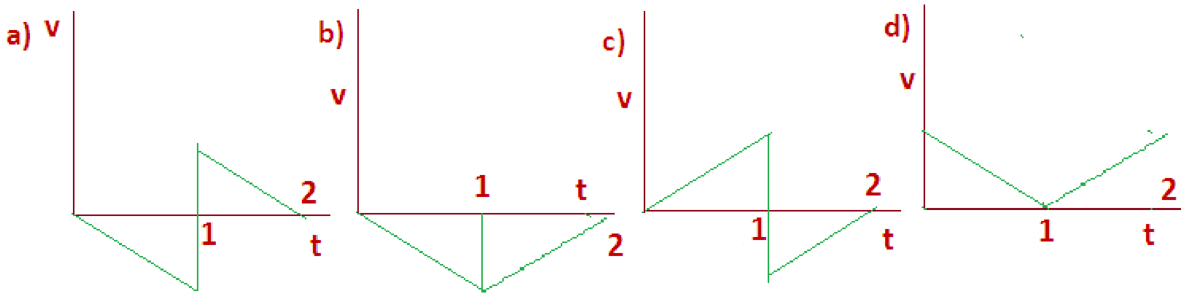
A few sample MCQs on the Syllabus of Class – XI in +2 Levels:

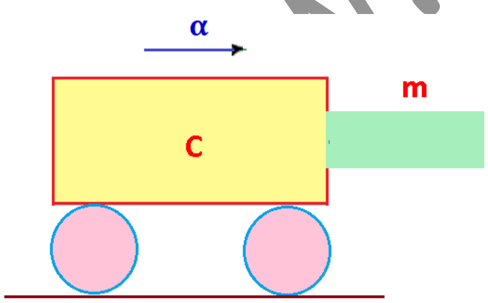
1. In an experiment four quantities a,b,c and d are measured with percentage error 1%, 2%, 3% and 4% respectively. Quantity P is calculated as follows $P = \frac{a^3b^2}{cd}$%. Error in P is (a) 14% (b) 10% (c) 7% (d) 4%

2. If $\vec{A} = 2\hat{i} + 3\hat{j}$ and $\vec{B} = \hat{i} + \hat{j}$ then find the component of the vector $\vec{A}$ along the vector $\vec{B}$ (a) $\frac{1}{\sqrt{2}}(\hat{i} + \hat{j})$ (b) $\frac{3}{\sqrt{2}}(\hat{i} + \hat{j})$ (c) $\frac{5}{2}(\hat{i} + \hat{j})$ (d) $\frac{7}{\sqrt{2}}(\hat{i} + \hat{j})$

3. The displacement-time graph of a moving particle with constant acceleration is shown in figure. The velocity-time graph is given by

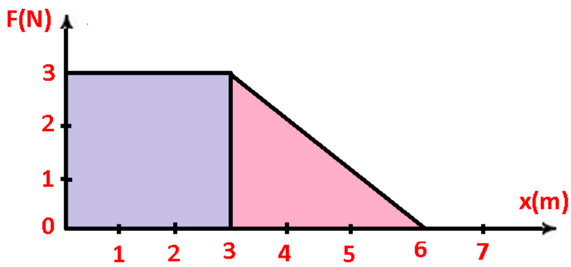




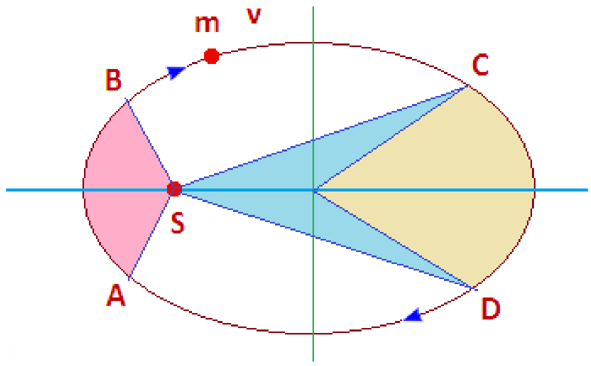


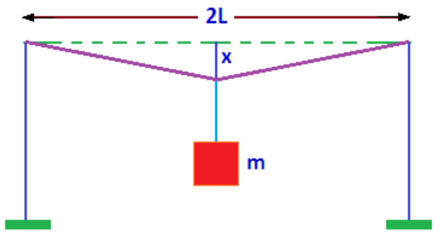
4. A block of mass m is in contact with the cart C as shown in the figure . The coefficient of static friction between the block and the cart. The acceleration α of the cart that will prevent the block from falling satisfies (a)$\alpha > \frac{mg}{\mu}$ (b) $\alpha > \frac{g}{\mu m}$ (c)$\alpha \geq \frac{g}{\mu}$ (d) $\alpha < \frac{g}{\mu}$

5. A force F acting on an object varies with distance x is in meter. The work done by the force in moving the object from $x = 0$ to $x = 6m$ (a) 4.5 J (b) 13.5 J (c) 9.0 J (d) 18.0 J



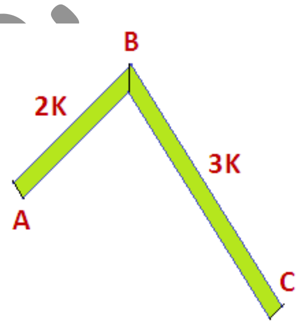
6. The figure shows elliptical orbit take of a planet m about the sun S.The shaded area SCD is twice the shaded area SAB. If t_1 isthe time for the planet to movefrom C to D and t_2 is the time to move fromA to B, then (a) $t_1 > t_2$ (b) $t_1 = 4t_2$ (c) $t_1 = 2t_2$ (d) $t_1 = t_2$



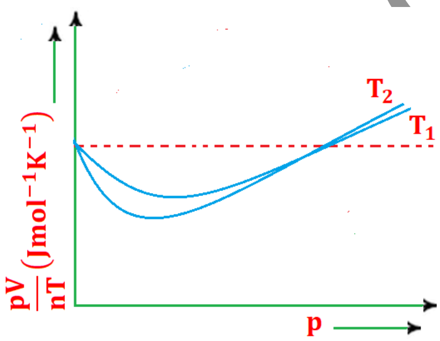


7. A mild steel wire of length $2L$ and cross-sectional area A is stretched, well within elastic limit, horizontally between two pillars as shown in figure. A mass m is suspended from the mid-point of the wire; strain in the wire is (a) $\frac{x^2}{2L^2}$ (b) $\frac{x}{L}$ (c) $\frac{x^2}{L}$ (d) $\frac{x^2}{2L}$

8. In the figure, ABC is a conducting rod whose lateral surfaces are insulated. The length of the section AB is one-half of that of BC and the respective thermal conductivities of the two sections are as given in the figure. If the ends A and C are maintained at 0°C and 70°C respectively, the temperature of junction B in the steady state is (a) 30°C (b) 40°C (c) 50°C (d) 60°C



9. The figure below shows, the plot of $\frac{pV}{nT}$ versus p for oxygen gas at two different temperatures. Read the following statements concerning the above curves:



(I) The dotted line corresponds to the ideal gas behavior (II) $T_1 > T_2$ (III) The value of $\frac{pV}{nT}$ at the point, where the curves meet on the $Y -$ axis is the same for all gases. Which of the above statements is true? (a) Only (I) (b) Both (I) and (II) (c) All of these (d) None of these

10. A block of mass m is suspended by different springs force constant shown in figure. Let time period of oscillation in these four positions beT_1, T_2, T_3 and T_4. Then, which of the following statement is correct? (a) $T_1 = T_2 = T_4$ (b) $T_1 = T_2$ and $T_3 = T_4$ (c)$T_1 = T_2 = T_3$ (d) $T_1 = T_3$ and $T_2 = T_4$